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Alameda County
Environmental Health

August 2, 2010

Ms. Donna Drogos
Alameda County Environmental Health
1131 Harbor Parkway, Suite 250
Oakland, CA 94502-6577

Subject: Workplan
Stop N Save Inc.
20570 Stanton Avenue, Castro Valley, Alameda County, California
RO #0000179
ECG # SNS.18281

Dear Ms. Drogos:

Enclosed please find a copy o the July 26, 2010 Site Investigation Workplan for the above referenced site prepared by our consultant Environmental Compliance Group, LLC.

I declare, under penalty and perjury, that the information and/or recommendations contained in this workplan are true and correct to the best of my knowledge.

Respectfully,

Sean Kapoor

Sean Kapoor

Charanjeet S. Kapoor
Stop N' Save Inc
Sec/Tres

Environmental
Compliance
Group, LLC

270 Vintage Drive
Turlock, CA 95382
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SITE INVESTIGATION WORKPLAN

STOP N SAVE INC. FACILITY
20570 STANTON AVENUE
CASTRO VALLEY, CALIFORNIA

Prepared for: Stop N Save Inc.

ECG Project Number: SNS.18281
Alameda County Fuel Leak Case No. RO0000179

REGISTERED GEOLOGIST
MICHAEL S. SGOURAKIS
No. 7194
STATE OF CALIFORNIA

July 26, 2010

Drew Van Allen
Senior Project Manager

Michael S. Sgourakis
Principal Geologist
CA P.G. No. 7194

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INTRODUCTION

Environmental Compliance Group (ECG) has been authorized by Stop N Save, Inc. to provide this report for the Stop N Save Inc. Facility (the site).

This workplan proposes activities to evaluate the vertical and lateral extent of impacted soil and groundwater. Site information is as follows:

Site Location:	20570 Stanton Avenue Castro Valley, California
Geotracker Global ID:	T0600183405

LIMITATIONS

This report has been prepared for use by Stop N Save, Inc. and the relevant regulatory agencies. The conclusions in this report are professional opinions based on the data presented in this report. This report was prepared in general accordance with hydrogeologic and engineering methods and standards. No other warranties are made as to the findings or conclusions presented in this report. The work described in this report was performed under the direct supervision of the professional geologist whose signature and State of California registration are shown above.

SITE DESCRIPTION AND HYDROGEOLOGIC CONDITIONS

SITE DESCRIPTION

The site occupies a parcel located on the southeast corner of Stanton Avenue and San Carlos Avenue in Castro Valley, Alameda County, California (Figure 1). The site is situated in a commercial and residential area in central Castro Valley and is currently operated as a gasoline station. The area of interest at the site is the former location of two underground storage tanks (USTs) and fuel dispensers where impacted soil and groundwater was first identified in 2000. A detailed site plan is shown on Figure 2.

HYDROGEOLOGIC CONDITIONS

The site is underlain by Quaternary-aged alluvium. Mapped bedrock outcrops near the site include the Penoche Formation, a conglomerate, and the Knoxville Formation, a micaceous shale. The site is located in the Castro Valley Groundwater Basin, which is approximately 4 miles square and drains into San Lorenzo Creek.

Based on boring logs from the installation of the three groundwater monitoring wells and the advancement of one soil boring, the stratigraphy of the site and vicinity consists of sandy clay to silty clay from the surface to 23-feet below ground surface (bgs). Discontinuous thin intervals of sands and/or gravels appear to be present in the area at minor thicknesses.

Groundwater monitoring has been ongoing for 10 years. Depth to groundwater is shallow, ranging between 4- to 9-feet bgs. The groundwater flow direction has been consistently toward the northeast generally following the surface topography.

CLEANUP GOALS

It is prudent to establish cleanup goals for soil and groundwater based upon reaching the residential Environmental Screening Levels (ESLs) established by Region II for sites where shallow soil has been impacted and groundwater is not a current or potential drinking water source. The primary constituents of concern relative to the site appear to be total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tertiary butyl ether (MTBE), tertiary amyl ether (TAME), and tertiary butyl alcohol (TBA). Accordingly, the following cleanup goals are proposed:

Constituent	**Soil (mg/kg)**	**Groundwater (ug/L)**
TPHg	100	210
Benzene	0.12	46
Toluene	9.3	130
Ethylbenzene	2.3	43
Xylenes	11	100
MTBE	8.4	1,800
TBA	100	18,000

PROJECT BACKGROUND

INVESTIGATIONS

In February 2000, two 10,000-gallon USTs and associated dispensers were removed. Results are detailed in Enviro Soil Tech Consultants' (ETSC) *Soil Sampling Beneath Removed USTs Report*, dated March 8, 2000.

In September 2000, ETSC supervised the installation of three groundwater monitoring wells (STMW-1 through STMW-3) and the advancement of one soil boring (B-4). Results are detailed in ETSC's *Preliminary Soil and Groundwater Assessment Report*, dated October 13, 2000.

Well construction details are provided on Table 1.

DISTRIBUTION OF MASS CONTAMINANTS

Five UST removal soil samples, eight overexcavation soil samples, three groundwater monitoring wells and one soil boring (Figure 2) have adequately characterized the lateral extent of impacted soil with the exception of the downgradient direction. Soil analytical results are summarized on Tables 2a and 2b and show reported soil concentrations did exceed ESLs for TPHg, benzene, and xylenes in mostly downgradient sample locations Pit-7-11 and Pit-8-11. Vertical definition is required as presently no soil samples have been collected from depths greater than 11-feet bgs.

Three groundwater monitoring wells and one groundwater grab sample have not adequately characterized the vertical or lateral extent of impacted groundwater. Groundwater analytical results are summarized on Tables 3a, 3b, 4a, and 4b and show reported groundwater concentrations did exceed ESLs for TPHg, BTEX, and MTBE constituents at location STMW-1.

Groundwater analytical results also show reported groundwater concentrations did exceed ESLs for TPHg and MTBE at locations STMW-2.

RISK ASSESSMENTS

A preferential pathway study has been completed and is discussed later in this workplan.

A sensitive receptor survey has not been completed for the site. A sensitive receptor survey will be completed in conjunction with upcoming field activities and results will be submitted in the site investigation results report.

A soil vapor survey has not been completed for the site.

CORRECTIVE ACTIONS

In July 2000, ETSC over-excavated and treated with bioremediation techniques, approximately 150 cubic yards of impacted soil. Results of the sampling, treatment, and disposal activities are detailed in ETSC's *Soil Sampling, Treatment, and Disposal of Stockpiled Soil Report*, dated August 21, 2000.

PROPOSED SCOPE OF WORK

In correspondence dated October 31, 2008 and May 27, 2010, Alameda County Environmental Health Services (ACEHS) requested a workplan to further delineate the lateral and vertical extent of impacted soil and groundwater downgradient of the northern end of the excavated area (Appendix A). ECG proposes to advance up to six soil borings (SB-5 through SB-10) and install three monitoring wells (MW-4 through MW-6) to evaluate the lateral and vertical extent of impacted soil and groundwater. The proposed borings will be installed in crossgradient (SB-8 and SB-9) and downgradient (SB-5 through 7) locations to evaluate the lateral extent of impacted groundwater. One additional soil boring (SB-10) will be advanced near the former source area to approximately 25-feet bgs to collect a depth discrete hydropunch groundwater sample to evaluate the vertical extent of impacted groundwater.

The existing monitoring well network is constructed with screen intervals that are too deep and are groundwater levels are typically above the top of screen which can yield inaccurate analytical data. Two proposed wells will be installed in the source area (MW-4 and MW-5) and one well (MW-6) will be installed downgradient of the source area. The proposed boring and well locations are shown on Figure 5.

SOIL BORINGS

Prior to conducting any subsurface work at the site, Underground Services Alert (USA) will be contacted to delineate subsurface utilities near the site with surface markings. In addition, the first five feet of every location will be hand cleared as a further precaution against damaging underground utilities. All work will be done in accordance to ECG standard operating procedures (SOPs) included as Appendix B.

ECG will supervise a California licensed C57 driller during the advancement of six direct push soil borings. Based on current site information, first encountered groundwater will be approximately 8-feet bgs. Soil samples will be collected continuously and lithology and visual and olfactory observations will be recorded in the field. Soil samples will be field screened with a photoionization detector (PID) and at least three soil samples from each boring will be submitted for chemical analyses. Sample depth intervals submitted for analysis will be based on selecting the most impacted location determined by field observations and quantifying vertical definition.

After soil sampling is completed, the probe pipes will be removed and a groundwater sample will be collected from each boring and submitted for chemical analyses. The fresh formation water entering the boring will be sampled directly from the direct push boring. Upon completion, the borings will be grouted to the surface. The depth sample interval will utilize a hydropunch to seal a selected deeper zoned interval.

MONITORING WELLS

Apex will supervise a California licensed C57 driller, during the advancement of three 8-inch diameter hollow stem auger soil borings (MW-4 through MW-6) at locations proposed on Figure 3. Groundwater is expected at approximately 8 feet bgs and monitoring wells will be installed to 20-feet bgs. Wells will be constructed as 2-inch diameter PVC wells with 15-feet of 0.020 screen and #3 sand. A one-foot bentonite seal will separate the filter pack from the neat cement grout installed to the surface. Soil samples will be collected continuously and lithology and visual and olfactory observations will be recorded in the field. Soil samples will be field screened with a PID and at least three soil samples from each boring will be submitted for chemical analyses using the same rational as stated above.
Each new monitoring well will be developed and all six onsite monitoring wells will be sampled according to ECG's SOPs contained in Appendix B.

SAMPLE ANALYSES

Soil and groundwater samples will be labeled and placed in an insulated container for delivery to Argon Labs in Ceres, California under proper chain-of-custody documentation. The groundwater samples will be analyzed for TPHg, benzene, toluene, ethyl benzene, and xylenes (BTEX), five oxygenates, 1,2-DCA and EDB by EPA Method 8260B.

PREFERENTIAL PATHWAY STUDY

ECG conducted a preferential pathway study of the Site to evaluate the potential for subsurface utility trenches to act as conduits for groundwater and contaminant migration. ECG performed a site vicinity reconnaissance and contacted the following agencies/companies:

- Alameda County Building Department
- Pacific Gas and Electric Company (PG&E)
- Castro Valley Sanitation District
- East Bay Municipal Utility District (EBMUD)

On July 16, 2010, ECG reviewed building permits and as-built drawings for the site. Information was available on microfiche. Water, sewer, and underground gas lines were identified north and west of the site. Communication lines and electric lines are located aboveground for this site. Technical information of the underground utilities including pipe diameter are shown on Figure 4. Locations and depths were based on the site reconnaissance, the Alameda County Building Department file review, information provided by Castro Valley Sanitation District and maps provided by EBMUD.

An 8-inch diameter water line is present north to south on Stanton Avenue and west to east on San Carlos Avenue. The water line is located approximately 3-feet bgs in both Stanton Avenue and San

Carlos Avenues. A 2-inch diameter water line, set approximately at 2-feet bgs enters the site from Stanton Avenue.

A 6-inch diameter vitrified clay pipe sewer line is present north to south on Stanton Avenue and west to east on San Carlos Avenue. The water line is located approximately 3-feet bgs in both Stanton Avenue and San Carlos Avenues.

A 21-inch diameter storm drain line is present north to south on Stanton Avenue and west to east on San Carlos Avenue. The storm drain line is located approximately 9-feet bgs in both Stanton Avenue and San Carlos Avenues.

A 2-inch diameter natural gas line is present north to south on Stanton Avenue and west to east on San Carlos Avenue. The natural gas line is located approximately 2- to 4-feet bgs in both Stanton Avenue and San Carlos Avenues.

Based on the depth to water at the site (between 4- to 9-feet bgs), the depth of underground utilities adjacent and downgradient from the site (2- to 9- feet bgs), and the fact that the downgradient extent of impacted groundwater is undefined, there exists potential for the subsurface trenches, specifically the storm drain, to act as conduits for impacted groundwater. Based on the results of this proposed workplan, additional downgradient assessment in the vicinity of the underground utilities may be necessary.

RESULTS REPORT

Results of drilling activities and a sensitive receptor survey will be detailed in a results report. This report will contain recommendations for additional investigation activities, if necessary, and/or the preparation of a Corrective Action Plan, if necessary.

FIGURES

NORTH

0 1,000 2,000

Approximate Scale In Feet
1 inch = 1,000 Feet

FIGURE 1	SITE LOCATION MAP	Environmental Compliance Group, LLC
Project Number: SNS.18281	Stop 'N' Save 20570 Stanton Avenue Castro Valley, California	270 Vintage Drive, Turlock, CA 95382 Phone: (209) 664-1035
Date: July 21, 2010		

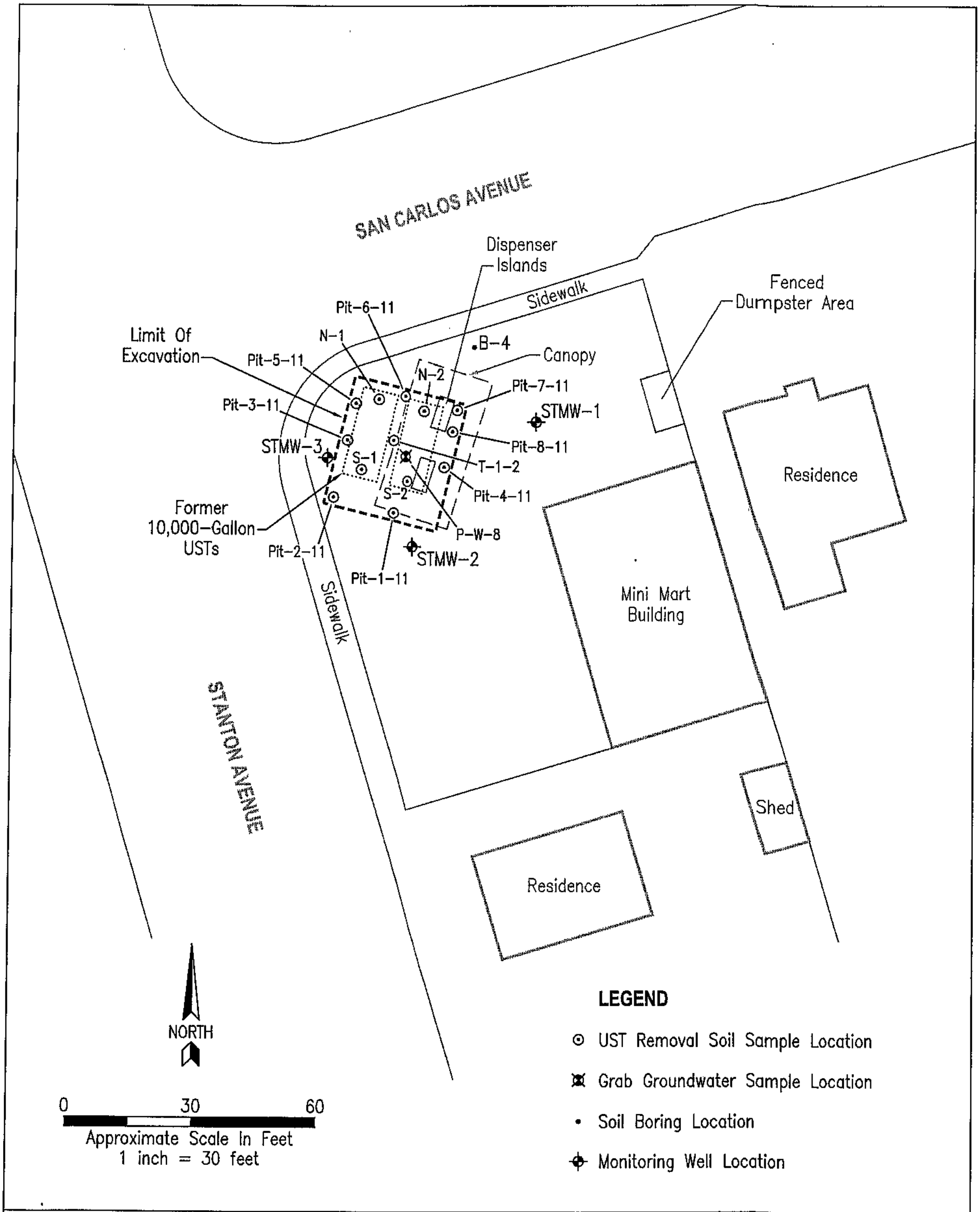
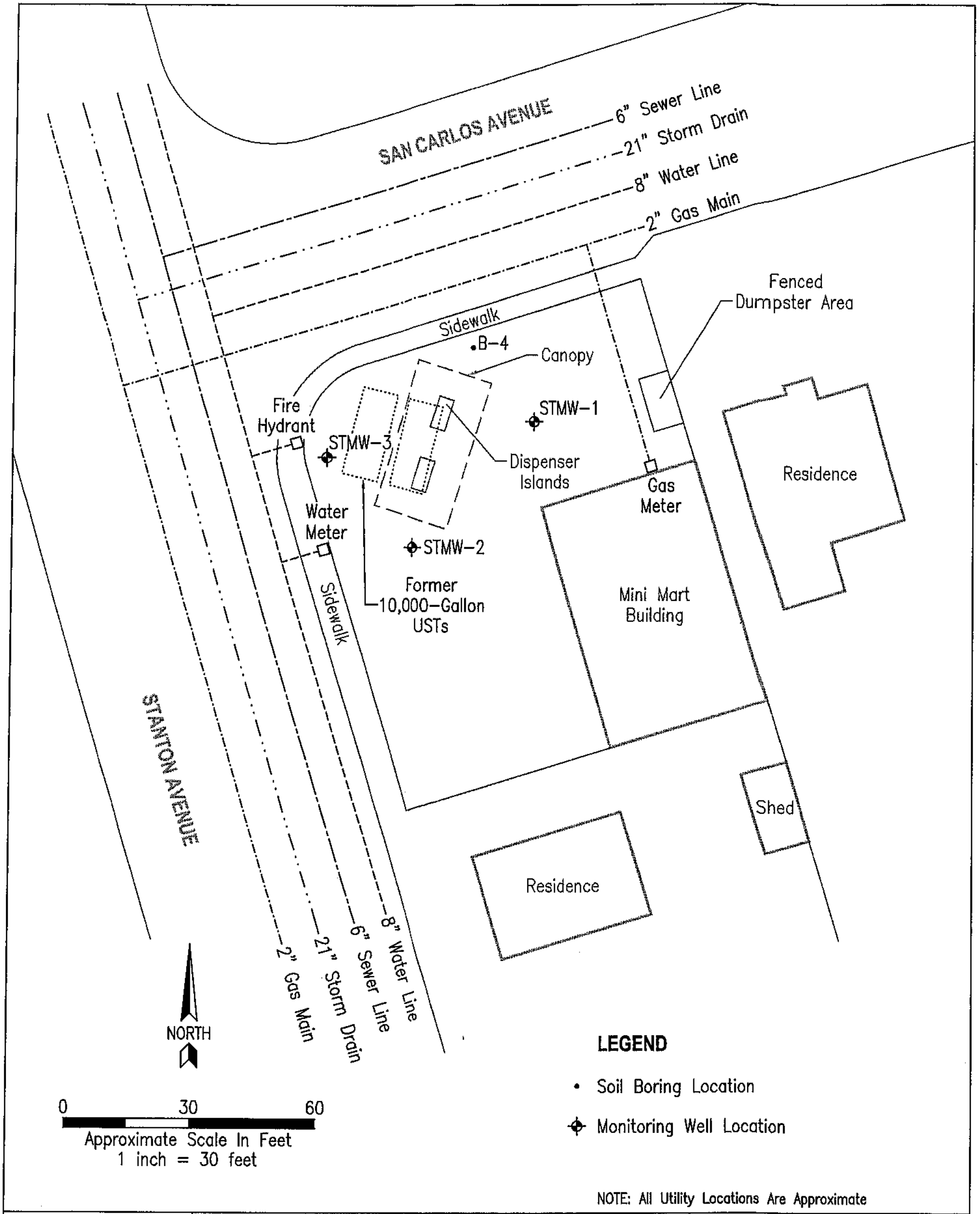


FIGURE 2	SITE MAP	Environmental Compliance Group, LLC
Project Number: SNS.18281	Stop 'N' Save 20570 Stanton Avenue Castro Valley, California	270 Vintage Drive, Turlock, CA 95382 Phone: (209) 664-1035
Date: July 26, 2010		



NOTE: All Utility Locations Are Approximate

FIGURE 3	PREFERENTIAL PATHWAY MAP	Environmental Compliance Group, LLC
Project Number: SNS.18281	Stop 'N' Save 20570 Stanton Avenue Castro Valley, California	270 Vintage Drive, Turlock, CA 95382 Phone: (209) 664-1035
Date: July 26, 2010		

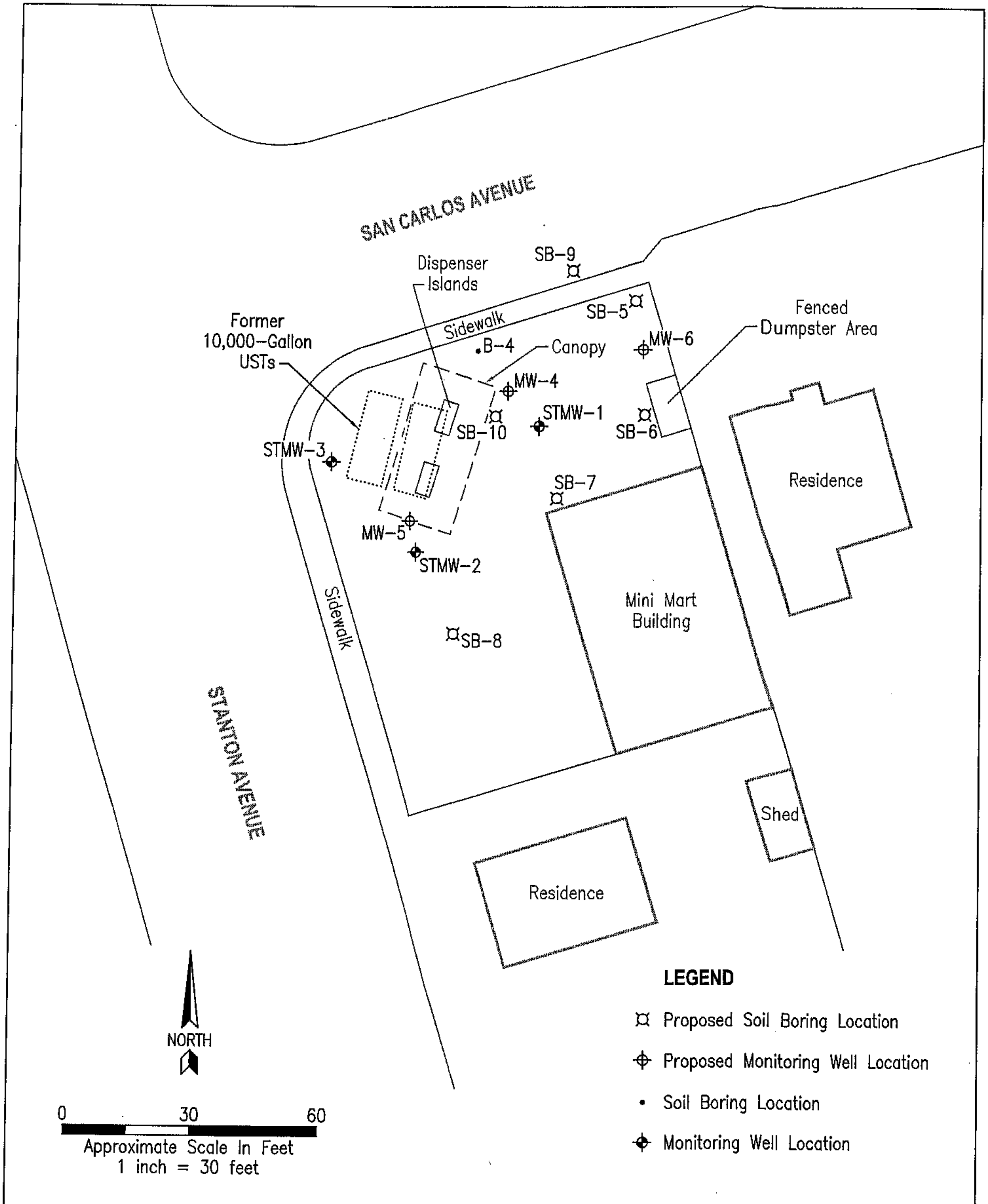


FIGURE 4	PROPOSED SOIL BORING AND MONITORING WELL LOCATION MAP Stop 'N' Save 20570 Stanton Avenue Castro Valley, California	Environmental Compliance Group, LLC 270 Vintage Drive, Turlock, CA 95382 Phone: (209) 664-1035
Project Number: SNS.18281		
Date: July 26, 2010		

TABLES

Table 1
Well Construction Details
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID	Date Installed	TOC Elevation (ft amsl)	Total Depth (ft bgs)	Casing Diameter (inches)	Casing Material	Screen/ Filter	Screen Interval (ft bgs)
Monitoring Wells							
STMW-1	October 2000	97.93	23	2	PVC	0.020/#3	9-23
STMW-2		99.04	22	2	PVC	0.020/#3	9-22
STMW-3		99.6	22	2	PVC	0.020/#3	9-22

Notes:

TOC - denotes top-of-casing
ft - denotes feet
amsl - denotes above mean sea level
bgs - denotes below ground surface
--- - denotes no data
pvc - denotes polyvinyl chloride

Table 2a
Historical Soil Analytical Data
TPH and BTEX
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Sample ID	Sample Depth (feet)	Collection Date	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)
Near Surface Samples							
N-1	10*	February 2000	**5.6**	**0.07**	**0.26**	**0.15**	**0.98**
N-2	10*		**11**	**0.068**	**0.26**	**0.13**	**1.1**
S-1	10*		<1.0	<0.005	<0.005	<0.005	**0.012**
S-2	10*		**1.2**	<0.005	<0.005	**0.006**	**0.037**
T-1-2	10*		**71**	**0.22**	**0.47**	**0.49**	**3.7**
Pit-1-11	11	July 2000	**91**	**0.38**	**0.35**	**1.6**	**8.4**
Pit-2-11	11		<1.0	<0.005	<0.005	<0.005	<0.005
Pit-3-11	11		<1.0	<0.005	**0.005**	<0.005	**0.038**
Pit-4-11	11		<1.0	<0.005	<0.005	<0.005	<0.005
Pit-5-11	11		**130**	**0.14**	**0.26**	**1.1**	**8.5**
Pit-6-11	11		**8.2**	**0.077**	**0.13**	**0.08**	**0.76**
Pit-7-11	11		**220**	**0.58**	**1.3**	**1.8**	**24**
Pit-8-11	11		**1,000**	**5.7**	**3.9**	**14**	**25**
Soil Boring							
B-4	5	September 2000	<1.0	<0.10	<0.10	<0.10	<0.10
B-4	10		<1.0	**0.02**	<0.02	<0.02	<0.02
Monitoring Wells							
STMW-1	5	September 2000	**18**	<0.25	<0.25	<0.25	**1.1**
STMW-1	10		**76**	<1.0	<1.0	<1.0	**7.7**
STMW-2	5		<1.0	<0.005	<0.005	<0.005	<0.005
STMW-2	10		<1.0	<0.005	<0.005	<0.005	<0.005
STMW-3	5		**1.3**	<0.005	<0.005	<0.005	<0.005
STMW-3	10		<1.0	<0.005	<0.005	<0.005	<0.005

Notes:

TPHg - denotes total petroleum hydrocarbons as gasoline
mg/kg - denotes milligrams per kilogram
< - denotes less than the detection limit
* - denotes approximate depth based on tank diameter and sample notes

Table 2b
Historical Soil Analytical Data
Oxygenates and Lead Scavengers
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Boring ID	Sample Depth (feet)	Collection Date	DIPE (mg/kg)	ETBE (mg/kg)	MTBE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)
Near Surface Soil Samples									
N-1	10*	February 2000	---	---	**0.74**	---	---	---	---
N-2	10*		---	---	**3.8**	---	---	---	---
S-1	10*		---	---	**0.18**	---	---	---	---
S-2	10*		---	---	**0.11**	---	---	---	---
T-1-2	10*		---	---	**1.2**	---	---	---	---
Pit-1-11	11	July 2000	---	---	<0.005	---	---	---	---
Pit-2-11	11		---	---	<0.005	---	---	---	---
Pit-3-11	11		---	---	**0.094**	---	---	---	---
Pit-4-11	11		---	---	<0.005	---	---	---	---
Pit-5-11	11		---	---	<0.005	---	---	---	---
Pit-6-11	11		---	---	**0.42**	---	---	---	---
Pit-7-11	11		---	---	<0.005	---	---	---	---
Pit-8-11	11		---	---	**16**	---	---	---	---
Soil Borings									
B-4	5	September 2000	<0.10	<0.10	**0.3**	<0.10	**0.5**	<0.10	<0.10
B-4	10		<0.02	<0.02	**0.16**	<0.02	<0.08	<0.02	<0.02
Monitoring Wells									
STMW-1	5	September 2000	<0.25	<0.25	**1.5**	<0.25	<1.0	<0.25	<0.25
STMW-1	10		<1.0	<1.0	**1.6**	<1.0	<4.0	<1.0	<1.0
STMW-2	5		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005
STMW-2	10		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005
STMW-3	5		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005
STMW-3	10		<0.005	<0.005	<0.005	<0.005	<0.050	<0.005	<0.005

Notes:

mg/kg - denotes milligrams per kilogram
--- - denotes not analyzed
< - denotes less than the detection limit
MTBE - denotes methyl tertiary butyl ether
1,2-DCA - denotes 1,2-dichloroethane

DIPE - denotes di-isopropyl ether
ETBE - denotes ethyl tertiary butyl ether
TAME - denotes tertiary amyl ether
TBA - denotes tertiary butyl alcohol
EDB - denotes ethyl dibromide

Table 3a
Grab Groundwater Sample Results
TPH and BTEX
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Sample ID	Date Measured	Sample Depth (ft bgs)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
P-W-8	July 2000	11	**110**	**2.6**	**0.83**	**0.95**	**1.7**

Notes:

TPHg - denotes total petroleum hydrocarbons as gasoline
ug/L - denotes micrograms per liter
< - denotes less than the detection limit
* - denotes approximate depth based on tank diameter and sample notes

Table 3b
Grab Groundwater Sample Results
Oxygenates and Lead Scavengers
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Sample ID	Date Measured	Sample Depth (ft bgs)	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
P-W-8	July 2000	11	---	---	130	---	---	---	---

Notes:

ug/L - denotes micrograms per liter
< - denotes less than the detection limit
DCA - denotes dichloroethane
EDB - denotes ethylene dibromide
MTBE - denotes methyl tertiary butyl ether
* - denotes approximate depth based on tank diameter and sample notes

DIPE - denotes di-isopropyl ether
ETBE - denotes ethyl tertiary butyl ether
TAME - denotes tertiary amyl ether
TBA - denotes tertiary butyl alcohol

Table 4a
Monitoring Well Data
Water Level, TPH, and BTEX
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID (TOC)	Date Measured	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft amsl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-1 97.93	10/4/2000	8.34	89.59	60,000	<2,500	<2,500	<2,500	<2,500
	1/4/2001	7.86	90.07	71,000	<2,500	<2,500	<2,500	<5,000
	3/16/2004	5.70	92.23	260	52	64	7.9	27
	7/5/2004	4.82	93.11	2,100	17	240	2.6	12
	12/28/2004	6.82	91.11	310	89	90	11	43
	3/24/2005	5.63	92.30	630	43	140	16	110
	7/20/2005	5.75	92.18	330	12	22	<2.5	9.3
	9/15/2005	7.44	90.49	15,000	<100	<100	<100	<100
	12/12/2005	5.32	92.61	130	4.4	7.5	<1.0	3
	3/16/2005	3.90	94.03	<50	0.9	3.3	<0.5	<0.5
	6/22/2006	7.12	90.81	130	4.4	54	<1.0	7.1
	9/21/2006	7.78	90.15	880	110	32	18	110
	12/18/2006	9.12	88.81	240	7.5	130	1.4	7.6
	3/22/2007	6.82	91.11	190	17	13	2.9	14
	6/29/2007	9.86	88.07	2,700	340	45	52	310
	9/28/2007	6.88	91.05	1,000	85	2.5	11	72
	12/20/2007	7.81	90.12	690	92	<5.0	<5.0	36
	3/27/2008	7.37	90.56	160	36	0.92	<0.50	5.1
	6/6/2008	7.98	89.95	170	44	<5.0	<5.0	<15
	8/14/2008	8.50	89.43	<1,000	24	<10	<10	<20
	12/30/2008	7.85	90.08	<100	2.6	<1.0	<1.0	<2.0
	3/6/2009	7.48	90.45	57	<5.0	<5.0	<5.0	<15
	6/12/2009	7.92	90.01	70	<5.0	<5.0	<5.0	<15
	12/1/2009	8.20	89.73	<50	<5.0	<5.0	<5.0	<15

Table 4a
Monitoring Well Data
Water Level, TPH, and BTEX
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID (TOC)	Date Measured	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft amsl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-2 99.04	10/4/2000	8.22	90.82	69	<5.0	<5.0	<5.0	<5.0
	1/4/2001	6.70	92.34	110	<5.0	<5.0	<5.0	<5.0
	3/16/2004	6.08	92.96	1,100	<10	<10	<10	<20
	7/5/2004	6.86	92.18	1,800	<10	<10	<10	<20
	12/28/2004	6.22	92.82	1,000	<13	<13	<13	<13
	3/24/2005	5.12	93.92	760	<5.0	<5.0	<5.0	<5.0
	7/20/2005	5.66	93.38	64	<1.0	<1.0	<1.0	<1.0
	9/15/2005	6.14	92.90	53	<1.0	<1.0	<1.0	<1.0
	12/12/2005	6.68	92.36	<50	2.2	<0.5	0.6	<0.5
	3/16/2005	5.54	93.50	<50	<0.5	<0.5	<0.5	<0.5
	6/22/2006	6.02	93.02	<50	<0.5	<0.5	<0.5	<0.5
	9/21/2006	6.94	92.10	<50	<0.5	<0.5	<0.5	<0.5
	12/18/2006	6.46	92.58	<50	<0.5	<0.5	<0.5	<0.5
	3/22/2007	6.16	92.88	<50	<0.5	<0.5	<0.5	<0.5
	6/29/2007	9.06	89.98	<50	<0.5	<0.5	<0.5	<0.5
	9/28/2007	7.63	91.41	<50	<0.5	<0.5	<0.5	<1.0
	12/20/2007	7.43	91.61	<50	<0.5	<0.5	<0.5	<1.0
	3/27/2008	6.16	92.88	<50	<0.50	<0.50	<0.50	<1.5
	6/6/2008	7.09	91.95	<50	<0.50	<0.50	<0.50	<1.5
	8/14/2008	7.85	91.19	<50	<0.5	<0.5	<0.5	<1.0
	12/30/2008	7.52	91.52	<50	<0.5	<0.5	<0.5	<1.0
	3/6/2009	6.90	92.14	<50	<0.50	<0.50	<0.50	<1.5
	6/12/2009	6.65	92.39	<50	<0.50	<0.50	<0.50	<1.5
	12/1/2009	7.43	91.61	<50	<0.50	<0.50	<0.50	<1.5

Table 4a
Monitoring Well Data
Water Level, TPH, and BTEX
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID (TOC)	Date Measured	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft amsl)	TPHg (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)
MW-3 99.60	10/4/2000	8.42	91.18	<50	<5.0	<5.0	<5.0	<5.0
	1/4/2001	6.16	93.44	<50	<5.0	<5.0	<5.0	<5.0
	3/16/2004	7.18	92.42	<50	<0.5	<0.5	<0.5	<1.0
	7/5/2004	6.27	93.33	<25	<0.5	<0.5	<0.5	<1.0
	12/28/2004	5.64	93.96	<25	<0.5	<0.5	<0.5	<0.5
	3/24/2005	5.12	94.48	<25	<0.5	<0.5	<0.5	<0.5
	7/20/2005	5.50	94.10	<50	<0.5	<0.5	<0.5	<0.5
	9/15/2005	5.56	94.04	<50	<0.5	<0.5	<0.5	<0.5
	12/12/2005	6.26	93.34	<50	<0.5	<0.5	<0.5	<0.5
	3/16/2005	5.14	94.46	<50	<0.5	<0.5	<0.5	<0.5
	6/22/2006	5.92	93.68	<50	<0.5	<0.5	<0.5	<0.5
	9/21/2006	6.14	93.46	<50	<0.5	<0.5	<0.5	<0.5
	12/18/2006	5.50	94.10	<50	<0.5	<0.5	<0.5	<0.5
	3/22/2007	5.88	93.72	<50	<0.5	<0.5	<0.5	<0.5
	6/29/2007	8.82	90.78	<50	<0.5	<0.5	<0.5	<0.5
	9/28/2007	8.14	91.46	<50	<0.5	<0.5	<0.5	<1.0
	12/20/2007	6.56	93.04	<50	<0.5	<0.5	<0.5	<1.0
	3/27/2008	6.21	93.39	<50	<0.50	<0.50	<0.50	<1.5
	6/6/2008	6.84	92.76	<50	<0.50	<0.50	<0.50	<1.5
	8/14/2008	7.34	92.26	<50	<0.5	<0.5	<0.5	<1.0
	12/30/2008	6.45	93.15	<50	<0.5	<0.5	<0.5	<1.0
	3/6/2009	5.06	94.54	<50	<0.50	<0.50	<0.50	<1.5
	6/12/2009	6.54	93.06	<50	<0.50	<0.50	<0.50	<1.5
	12/1/2009	6.79	92.81	<50	<0.50	<0.50	<0.50	<1.5

Notes:

TPHg - denotes total petroleum hydrocarbons as gasoline
ug/L - denotes micrograms per liter
< - denotes less than the detection limit

Table 4b
Monitoring Well Data
Oxygenates and Lead Scavengers
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID	Date Measured	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
MW-1	10/4/2000	---	---	69,000	---	<10,000	---	---
97.93	1/4/2001	---	---	89,000	---	<20,000	---	---
	3/16/2004	---	---	39	---	<10	---	---
	7/5/2004	---	---	520	---	<50	---	---
	12/28/2004	---	---	32	---	<20	---	---
	3/24/2005	---	---	20	---	<20	---	---
	7/20/2005	---	---	310	---	<50	---	---
	9/15/2005	---	---	13,000	---	2,500	---	---
	12/12/2005	---	---	170	---	100	---	---
	3/16/2005	---	---	21	---	<10	---	---
	6/22/2006	---	---	70	---	<20	---	---
	9/21/2006	---	---	1,600	---	2,300	---	---
	12/18/2006	---	---	130	---	180	---	---
	3/22/2007	---	---	360	---	170	---	---
	6/29/2007	---	---	3,100	---	2,200	---	---
	9/28/2007	<2.5	<2.5	1,000	<2.5	5,300	<2.5	<2.5
	12/20/2007	<5.0	<5.0	1,200	<5.0	15,000	<5.0	<5.0
	3/27/2008	<1.0	<1.0	590	<1.0	4,900	<1.0	<1.0
	6/6/2008	<10	<10	1,000	<10	5,700	<10	<10
	8/14/2008	<10	<10	450	<10	10,000	<10	<10
	12/30/2008	<1.0	<1.0	84	<1.0	7,700	<1.0	<1.0
	3/6/2009	<10	<10	340	<10	5,400	<10	<10
	6/12/2009	<10	<10	170	<10	5,000	<10	<10
	12/1/2009	<10	<10	42	<10	5,600	<10	<10

Table 4b
Monitoring Well Data
Oxygenates and Lead Scavengers
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID	Date Measured	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
MW-2 99.04	10/4/2000	---	---	66	---	<20	---	---
	1/4/2001	---	---	120	---	<20	---	---
	3/16/2004	---	---	1,700	---	<200	---	---
	7/5/2004	---	---	1,800	---	<200	---	---
	12/28/2004	---	---	1,400	---	<250	---	---
	3/24/2005	---	---	930	---	180	---	---
	7/20/2005	---	---	43	---	920	---	---
	9/15/2005	---	---	88	---	130	---	---
	12/12/2005	---	---	23	---	22	---	---
	3/16/2005	---	---	34	---	150	---	---
	6/22/2006	---	---	12	---	200	---	---
	9/21/2006	---	---	16	---	41	---	---
	12/18/2006	---	---	15	---	71	---	---
	3/22/2007	---	---	15	---	71	---	---
	6/29/2007	---	---	14	---	<10	---	---
	9/28/2007	<0.5	<0.5	14	<0.5	<5.0	<0.5	<0.5
	12/20/2007	<0.5	<0.5	6.2	<0.5	54	<0.5	<0.5
	3/27/2008	<1.0	<1.0	14	<1.0	<12	<1.0	<1.0
	6/6/2008	<1.0	<1.0	5.6	<1.0	<12	<1.0	<1.0
	8/14/2008	<0.5	<0.5	2.0	<0.5	<5.0	<0.5	<0.5
	12/30/2008	<0.5	<0.5	8.6	<0.5	<5.0	<0.5	<0.5
	3/6/2009	<1.0	<1.0	3.0	<1.0	<12	<1.0	<1.0
	6/12/2009	<1.0	<1.0	3.8	<1.0	<12	<1.0	<1.0
	12/1/2009	<1.0	<1.0	5.4	<1.0	<12	<1.0	<1.0

Table 4b
Monitoring Well Data
Oxygenates and Lead Scavengers
Stop N Save Inc.
20570 Stanton Avenue
Castro Valley, California

Well ID	Date Measured	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2-DCA (ug/L)	EDB (ug/L)
MW-3	10/4/2000	---	---	<5.0	---	<20	---	---
99.60	1/4/2001	---	---	<5.0	---	<20	---	---
	3/16/2004	---	---	2.8	---	<10	---	---
	7/5/2004	---	---	2.5	---	<10	---	---
	12/28/2004	---	---	2.0	---	<10	---	---
	3/24/2005	---	---	1.4	---	<10	---	---
	7/20/2005	---	---	1.5	---	<10	---	---
	9/15/2005	---	---	1.2	---	<10	---	---
	12/12/2005	---	---	<1.0	---	<10	---	---
	3/16/2005	---	---	<1.0	---	<10	---	---
	6/22/2006	---	---	<1.0	---	<10	---	---
	9/21/2006	---	---	<1.0	---	<10	---	---
	12/18/2006	---	---	<1.0	---	<10	---	---
	3/22/2007	---	---	<1.0	---	<10	---	---
	6/29/2007	---	---	<1.0	---	<10	---	---
	9/28/2007	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	12/20/2007	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	3/27/2008	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0
	6/6/2008	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0
	8/14/2008	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	12/30/2008	<0.5	<0.5	<0.5	<0.5	<5.0	<0.5	<0.5
	3/6/2009	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0
	6/12/2009	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0
	12/1/2009	<1.0	<1.0	<1.0	<1.0	<12	<1.0	<1.0

Notes:

ug/L - denotes micrograms per liter
< - denotes less than the detection limit
DCA - denotes dichloroethane
EDB - denotes ethylene dibromide
MTBE - denotes methyl tertiary butyl ether

DIPE - denotes di-isopropyl ether
ETBE - denotes ethyl tertiary butyl ether
TAME - denotes tertiary amyl ether
TBA - denotes tertiary butyl alcohol

APPENDICES

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
ALEX BRISCOE, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

NOTICE TO COMPLY

May 27, 2010

Sean Kapoor
Bonfare Market, Inc.
461 South Milpitas Boulevard, Suite 1
Milpitas, CA 95035

Subject: Site Characterization for Fuel Leak Case No. RO0000179 and GeoTracker Global ID T0600183405, Stop N Save, 20570 Stanton Avenue, Castro Valley, CA 94546

Dear Mr. Kapoor:

A review of the January 14, 2010, "Second Half 2009 Semi-Annual groundwater Monitoring Report" prepared by Apex Envirotech, Inc. (Apex) and the case file for the above-referenced site indicates that your case is currently not in compliance with Alameda County Environmental Health's (ACEH) October 31, 2010 correspondence, which required the submittal of a Soil and Groundwater Investigation Work Plan with a Preferential Pathway Evaluation. According to Apex, "[t]he property owners have postponed work plan submittal due to being suspended from the UST Cleanup Fund." Please note that Cleanup Fund suspension does not relieve you of your legal cleanup obligations for the site. Also, implementation of site characterization and/or cleanup at this site is crucial to be protective of human health and the environment and to move this case towards closure evaluation. Please note that as Responsible Parties, you are required by California Code of Regulations, Title 23, Division 3, Chapter 16, Article 11, §2720 through §2728 to characterize the site and implement corrective action.

In order to regain compliance, please submit a work plan by the date specified below. Failure to submit the required work plan by the due dates specified below may result in an issuance of a Notice of Violation and possible enforcement action by the District Attorney and/or ineligibility for reimbursement of corrective action costs incurred at the site from the Underground Storage Tank Clean-up Fund when suspension is lifted. Furthermore, ACEH may recommend removal of this site from the Underground Storage Tank Cleanup Fund. Pursuant to Chapter 6.7, California Health and Safety code, civil penalties up to $10,000 for each UST for each day of violation may be imposed. Once removed from the Clean-up Fund, the costs associated with the subsurface investigation work that is required will not be reimbursed. Please note that civil penalties for non-compliance are assessed from the original due date (January 30, 2009).

NOTIFICATION OF FIELDWORK ACTIVITIES

Please schedule and complete the fieldwork activities by the date specified below and provide ACEH with at least three (3) business days notification prior to conducting the fieldwork.

TECHNICAL REPORT REQUEST

Please submit technical reports to ACEH (Attention: Paresh Khatri), according to the following schedule:

- **July 26, 2010** – Soil and Water Investigation Work Plan (with Preferential Pathway Evaluation)
- **Due within 30 Days of Sampling** – Quarterly/Semi-annual Monitoring Report (2nd Quarter 2010)
- **Due within 30 Days of Sampling** – Quarterly/Semi-annual Monitoring Report (4th Quarter 2010)

Thank you for your cooperation. Should you have any questions or concerns regarding this correspondence or your case, please call me at (510) 777-2478 or send me an electronic mail message at paresh.khatri@acgov.org.

Sincerely,

Digitally signed by Paresh Khatri
DN: cn=Paresh Khatri, o=Alameda County Environmental Health, ou=Local Oversight Program, email=Paresh.Khatri@acgov.org, c=US
Date: 2010.05.27 17:49:42 -07'00'

Paresh C. Khatri
Hazardous Materials Specialist

Enclosure: Responsible Party(ies) Legal Requirements/Obligations
ACEH Electronic Report Upload (ftp) Instructions

cc: Thomas Knoch, Apex Envirotech, Inc., 11244 Pyrites Way, Gold River, CA 95670
Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Paresh Khatri, ACEH (*Sent via E-mail to: paresh.khatri@acgov.org*)
GeoTracker
File

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

October 31, 2008

Sean Kapoor
Bonfare Market, Inc.
461 South Milpitas Boulevard, Suite 1
Milpitas, CA 95035

Subject: Fuel Leak Case No. RO0000179 and GeoTracker Global ID T0600183405, Stop N Save, 20570 Stanton Avenue, Castro Valley, CA 94546

Dear Mr. Kapoor:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site including the recently submitted document entitled, "Second Quarter 2008 Groundwater Monitoring [Report]," dated August 6, 2008, which was prepared by Apex Envirotech, Inc. (Apex) for the subject site. The most recent groundwater sampling event is documented in the report with Apex concluding that declining concentration trends may be due to natural attenuation and recommends continued groundwater monitoring.

ACEH respectfully disagrees with the rationale for the declining concentration trends exhibited at the site and requests that you address the following technical comments and send us the technical work plan and reports described below.

TECHNICAL COMMENTS

1. **Monitoring Wells and Hydrogeologic Setting** – On October 4, 2000, Enviro Soil Tech installed three groundwater monitoring wells at the site. Monitoring well STMW-1 is installed to a depth of 23 feet below the ground surface (bgs) with a screened interval from 14 feet to 23 feet bgs. Monitoring wells STMW-2 and STMW-3 are installed to a depth of 22 feet bgs with a screened interval from 13 feet to 22 feet bgs. Depth to groundwater at the site has ranged from 3.9 feet to 9.86 bgs. Groundwater sample analytical results collected on October 4, 2000 detected total petroleum hydrocarbons (TPH) as gasoline (g), benzene, and methyl tertiary butyl ether (MTBE) at concentrations of 60,000 micrograms per liter (μg/L), <250 μg/L, and 69,000 μg/L, respectively, in a groundwater sample collected from monitoring well STMW-1. Groundwater sample analytical results collected on June 6, 2008 detected TPH-g, benzene, MTBE, and tertiary butyl alcohol (TBA) at concentrations of 170 μg/L, 44 μg/L, 1,000 μg/L, and 5,700 μg/L, respectively. Since groundwater elevation is above the screened interval for site monitoring wells and petroleum hydrocarbons have a specific gravity that is lower than water (therefore, float on water); concentrations of contaminants detected may not be representative of actual site conditions. Therefore, the monitoring wells appear to be incorrectly constructed, which may affect the contaminant concentrations detected in groundwater. Please evaluate and discuss the effect that groundwater elevations rising above monitoring well screens have on hydrocarbon concentrations for each monitoring well at the site. Please address the above-mentioned concerns and include your analysis in the Soil and Groundwater Investigation Work Plan requested below. Also please

construct the proposed monitoring wells so that accurate groundwater concentrations, indicative of actual site conditions can be collected.

2. **Preferential Pathway Study** – As mentioned above, depth to groundwater at the site has ranged between 3.9 feet to 9.89 feet below the ground surface (bgs). Since groundwater is relatively shallow at the site, a preferential pathway evaluation appears prudent. The purpose of the preferential pathway study is to locate potential migration pathways and conduits and determine the probability of the NAPL and/or plume encountering preferential pathways and conduits that could spread contamination. We request that you perform a preferential pathway study that details the potential migration pathways and potential conduits (wells, utilities, pipelines, etc.) for vertical and lateral migration that may be present in the vicinity of the site.

   Discuss your analysis and interpretation of the results of the preferential pathway study (including the detailed well survey and utility survey requested below) and report your results in the Soil and Groundwater Investigation Work Plan requested below. The results of your study shall contain all information required by California Code of Regulations, Title 23, Division 3, Chapter 16, §2654(b).

   a. Utility Survey

   An evaluation of all utility lines and trenches (including sewers, storm drains, pipelines, trench backfill, etc.) within and near the site and plume area(s) is required as part of your study. Please include maps and cross-sections illustrating the location and depth of all utility lines and trenches within and near the site and plume areas(s) as part of your study.

   b. Well Survey

   The preferential pathway study shall include a detailed well survey of all wells (monitoring and production wells: active, inactive, standby, decommissioned (sealed with concrete), abandoned (improperly decommissioned or lost); and dewatering, drainage, and cathodic protection wells) within a ¼ mile radius of the subject site. As part of your detailed well survey, please perform a background study of the historical land uses of the site and properties in the vicinity of the site. Use the results of your background study to determine the existence of unrecorded/unknown (abandoned) wells, which can act as contaminant migration pathways at or from your site. Please review and submit copies of historical maps, such as Sanborn maps, aerial photographs, etc., when conducting the background study.

3. **Soil and Groundwater Characterization** – Elevated concentrations of TPH-g and MTBE were detected in soil samples collected during monitoring well installations conducted on September 20, 2000. Specifically, TPH-g and MTBE were detected at concentration so 76 mg/kg and 1.6 mg/kg, respectively in soil samples collected from monitoring well STMW-1. Elevated concentrations of contaminants have also been consistently detected in down-gradient monitoring well STMW-1. Specifically, TPH-g, benzene, MTBE, and TBA were detected at concentrations of 170 μg/L, 44 μg/L, 1,000 μg/L, and 5,700 μg/L, respectively in groundwater samples collected on June 6, 2008. Based on the analytical data, the vertical and lateral extent of contamination does not appear adequately defined. Please propose a

scope of work to address the above-mentioned concerns and submit a work plan due by the date specified below.

4. **Contaminant Source Area Characterization** – On February 24, 2000, Johnson Tank Testing excavated and removed two 10,000-gallon gasoline USTs from the site. On July 25 and 26, 2000, approximately 150 cubic yards of soil was over-excavated from the former UST pit. Confirmation soil sample analytical results detected TPH-g, benzene, and MTBE at significantly elevated concentrations of 1,000 mg/kg, 5.7 mg/kg, 16 mg/kg, respectively in soil sample Pit-8-11 collected at 11 feet bgs indicating that a secondary source of contamination may exist. Based on the analytical results, the vertical and lateral extent of the contaminant source area appears undefined. Please propose a scope of work to address the above-mentioned concerns and submit a work plan due by the date specified below.

5. **GeoTracker Compliance and ACEH Electronic Data Requirements** – A review of the case file and the State Water Resources Control Board's (SWRCB) GeoTracker website indicate that not all electronic copies of analytical data have not been submitted, rendering the site to non-compliance status. Pursuant to California Code of Regulations, Title 23, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1, beginning September 1, 2001, all analytical data, including monitoring well samples, submitted in a report to a regulatory agency as part of the UST or LUST program, must be transmitted electronically to the SWRCB GeoTracker system via the internet. Also, beginning January 1, 2002, all permanent monitoring points utilized to collect groundwater samples (i.e. monitoring wells) and submitted in a report to a regulatory agency, must be surveyed (top of casing) to mean sea level and latitude and longitude to sub-meter accuracy using NAD 83. A California licensed surveyor may be required to perform this work. Currently, the wells appear to have been surveyed to an arbitrary benchmark to calculate groundwater gradient and flow direction. Therefore, a survey of the monitoring wells appears necessary.

   Additionally, pursuant to California Code of Regulations, Title 23, Division 3, Chapter 30, Articles 1 and 2, Sections 3893, 3894, and 3895, beginning July 1, 2005, the successful submittal of electronic information (i.e. report in PDF format) shall replace the requirement for the submittal of a paper copy. Please complete the surveying and upload all applicable electronic submittal types such as the analytical data (EDF), survey data (GEO_XY and GEO_Z), and PDF reports from July 1, 2005 to current to GeoTracker by the date specified below. Electronic reporting is described below. Please note that not all reports that have been uploaded to GeoTracker have been uploaded to ACEH's website, as required. Please reconcile both GeoTracker and ACEH's website and upload the appropriate EDFs and PDF reports due by the date specified below.

NOTIFICATION OF FIELDWORK ACTIVITIES

Please schedule and complete the fieldwork activities, including quarterly groundwater sampling, by the date specified below and provide ACEH with at least three (3) business days notification prior to conducting the fieldwork.

TECHNICAL REPORT REQUEST

Please submit technical reports to ACEH (Attention: Paresh Khatri), according to the following schedule:

- **December 15, 2008** – GeoTracker & ACEH Electronic Reporting Compliance
- **January 30, 2009** – Soil and Water Investigation Work Plan (with Preferential Pathway Evaluation)
- **January 30, 2009** – Quarterly Monitoring Report (4th Quarter 2008)
- **April 30, 2009** – Quarterly Monitoring Report (1st Quarter 2009)
- **July 30, 2009** – Quarterly Monitoring Report (2nd Quarter 2009)
- **October 30, 2009** – Quarterly Monitoring Report (3rd Quarter 2009)

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 777-2478 or send me an electronic mail message at paresh.khatri@acgov.org.

Sincerely,

Paresh C. Khatri
Hazardous Materials Specialist

Donna L. Drogos, PE
Supervising Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Michael S. Sgourakis, Apex Envirotech, Inc., 3446 N. Golden State Boulevard, Suite C, Turlock, CA 95382
Donna Drogos, ACEH
Paresh Khatri, ACEH
File

ENVIRONMENTAL COMPLIANCE GROUP, LLC
STANDARD OPERATING AND SAFETY AND LOSS CONTROL PROCEDURES

1.0 SOIL BORING/DRILLING SAMPLE COLLECTION AND CLASSIFICATION PROCEDURES

ECG will prepare a site-specific Health and Safety Plan as required by the Occupational Health and Safety Administration (OSHA) Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR.1910.120). The document will be reviewed and signed by all ECG personnel and subcontractors prior to performing work at the site.

Prior to conducting and subsurface work at the site, Underground Services Alert (USA) will be contacted to delineate subsurface utilities near the site with surface markings. In addition, the first five feet of every location will be hand cleared to a diameter larger than the diameter of the auger or probe as a further precaution against damaging underground utilities. Sites that are currently operated as gas stations will be cleared with a private utility locator prior to drilling activities.

Soil samples to be submitted for chemical analyses are collected into brass or stainless steel tubes. The tubes are placed in an 18-inch long split-barrel sampler. The split-barrel sampler is driven its entire length hydraulically or by 140-pound drop hammer. The split-barrel sampler is removed from the borehole and the tubes are removed. When the tubes are removed from the split-barrel sampler, the tubes are trimmed and capped with Teflon sheets and plastic caps or the soil is removed from the tubes and placed in other appropriate sample containers. The samples are sealed, labeled, and placed in ice under chain-of-custody to be delivered to the analytical laboratory. All samples will be kept refrigerated until their delivery to the analytical laboratory.

One soil sample collected from each split-barrel sampler is field screened with a photoionization detector (PID), flame ionization detector (FID), or other equivalent field screening meter. The soil sample is sealed in a plastic bag or other appropriate container to allow volatilization of volatile organic compounds (VOCs). The field meter is used to measure the VOC concentration in the container's headspace and is recorded on the boring logs at the appropriate depth interval.

Other soil samples collected from each split-barrel sampler are inspected and documented to identify the soil stratigraphy beneath the site and classify the soil types according to the United Soil Classification System. The soil types are recorded on boring logs with the appropriate depth interval and any pertinent field observations. Drilling and sampling equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections and boreholes and after use.

2.0 SOIL EXCAVATION SAMPLE COLLECTION AND CLASSIFICATION PROCEDURES

Soil samples to be submitted for chemical analyses are collected into brass or stainless steel tubes or other appropriate containers. The samples are sealed, labeled, and placed in ice under chain-of-custody (COC) to be delivered to the analytical laboratory. All samples will be kept refrigerated until their delivery to the analytical laboratory.

Select soil samples are placed into a sealed plastic bag or other appropriate container and field screened using a PID, FID, or equivalent meter. Other soil samples collected are inspected and documented to identify the soil stratigraphy beneath the site and classify the soil types according to the United Soil Classification System. The soil types are recorded field notes with the appropriate depth interval and any pertinent field observations. Sampling equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections, and after use. Soil cuttings and rinseate water are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

3.0 SAMPLE IDENTIFICATION AND COC PROCEDURES

Sample containers are labeled with job number, job name, sample collection time and date, sample collection point, and analyses requested. Sampling method, sampler's name, and any pertinent field observations are recorded on boring logs or excavation field notes. COC forms track the possession of the sample from the time of its collection until the time of its delivery to the analytical laboratory. During sample transfers, the person with custody of the samples will relinquish them to the next person by signing the COC and documenting the time and date. The analytical laboratory Quality Control/Quality Assurance (QA/QC) staff will document the receipt of the samples and confirm the analyses requested on the COC matches the sample containers and preservative used, if any. The analytical laboratory will assign unique log numbers for identification during the analyses and reporting. The log numbers will be added to the COC form and maintained in a log book maintained by the analytical laboratory.

4.0 ANALYTICAL LABORATORY QA/QC PROCEDURES

The analytical laboratory analyzes spikes, replicates, blanks, spiked blanks, and certified reference materials to verify analytical methods and results. The analytical laboratory QA/QC also includes:

Routine instrument calibration,
Complying with state and federal laboratory accreditation and certification programs,
Participation in U.S. EPA performance evaluation studies,
Standard operating procedures, and
Multiple review of raw data and client reports

5.0 HOLLOW STEM AUGER WELL INSTALLATION

Boreholes for wells are often drilled with a truck-mounted hollow stem auger drill rig. The borehole diameter is at least 4 inches wider than the outside diameter of the well casing. Soil samples are collected and screened as described in **Section 1.0** and decontamination procedures are also the same as described in **Section 1.0**.

Wells are cased with both blank and factory-perforated Schedule 40 PVC. The factory perforations are typically 0.020 inches wide by 1.5 inch long slots, with 42 slots per foot. A PVC cap is typically installed at the bottom of the casing with stainless steel screws. No solvents or cements are used in the construction of the wells. Well stabilizers or centering devices may be installed around the casing to ensure the filter material and grout in the annulus are evenly distributed. The casing is purchased pre-cleaned or steam cleaned and washed prior to installation in the borehole.

The casing is set inside the augers and sand, gravel, or other filter material is poured into the annulus to fill the borehole from the bottom to approximately 1-2 feet above the perforations. A two foot thick bentonite plug is placed above the filter material to prevent the grout from filling the filter pack. Neat cement or sand-cement grout is poured into the annulus from the top of the bentonite plug to the surface. For wells located in parking lots or driveways, or roads, a traffic rated well box is installed around the well. For wells located in landscaped areas or fields, a stovepipe well protection device is installed around the well. Soil cuttings and rinseate water are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

6.0 MUD AND AIR ROTARY WELL INSTALLATION

Boreholes for wells can also be drilled with a truck-mounted air rotary or mud rotary drill rig. Air or mud can be used as a drill fluid to fill the borehole and prevent the borehole from caving in and remove drill cuttings. Mud or air can be chosen depending on the subsurface conditions. Soil samples are collected and screened as described in **Section 1.0** and decontamination procedures are also the same as described in **Section 1.0**.

Wells are cased with both blank and factory-perforated Schedule 40 PVC. The factory perforations are typically 0.020 inches wide by 1.5 inch long slots, with 42 slots per foot. A PVC cap is typically installed at the bottom of the casing with stainless steel screws. No solvents or cements are used in the construction of the wells. Well stabilizers or centering devices may be installed around the casing to ensure the filter material and grout in the annulus are evenly distributed. The casing is purchased pre-cleaned or steam cleaned and washed prior to installation in the borehole. Soil cuttings and drilling fluids are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

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7.0 WELL DEVELOPMENT

After well installation, the wells are developed to remove residual drilling materials from the annulus and to improve well production by fine materials from the filter pack. Possible well development methods include pumping, surging, bailing, jetting, flushing, and air lifting. Development water is temporarily stored onsite pending laboratory analytical results and proper transport and disposal. Development equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections and after use. After well development the wells are typically allowed to stabilize for at least 24 hours prior to purging and sampling.

8.0 LIQUID LEVEL MEASUREMENTS

Liquid level measurements are made with a water level meter and/or interface probe and disposable bailers. The probe tip attached to a measuring tape is lowered into the well and into the groundwater when a beeping tone indicates the probe is in the groundwater. The probe and measuring tape (graduated to hundredths of a foot) are slowly raised until the beeping stops and the depth to water measurement is recorded. If the meter makes a steady tone, this indicates the presence of floating liquid hydrocarbons (FLH) and the probe and measuring tape are raised until the steady tone stops and the depth to the FLH is measured. Once depth to water and depth to FLH (if present) has been recorded, the probe and measuring tape are lowered to the bottom of the well where the total depth of the well is measured. The depth to water, depth to FLH, and depth to bottom are measured again to confirm the results.

If FLH is encountered in the well, a disposable bailer is lowered into the well and brought back to the surface to confirm the thickness/presence of FLH. To minimize potential for cross contamination between wells, all measurements are done from cleanest to dirtiest well. Prior to beginning liquid level measurements, in between measurements in all wells, and at the completion of liquid level measurements, the water level probe and measuring tape is cleaned with solution (Alconox, Simple Green, or equivalent) and rinsed with deionized water.

9.0 WELL PURGING AND SAMPLING

Each well is typically purged of at least three well casing volumes of groundwater prior to collecting a groundwater sample. Purging can continue beyond three well casing volumes if field parameters including pH, temperature, electrical conductivity are not stabilizing during the purging process. If the well is purged dry before the three well casing volumes has been purged, the well is typically allowed to recharge to 80 percent of its initial water level before a groundwater sample is collected.

Purging equipment can include submersible pumps, PVC purging bailers, disposable bailers, air lift pumps, or pneumatic pumps. Prior to beginning well purging, in between each well purging, and at the completion of purging activities, all non-dedicated purging equipment is cleaned with solution (Alconox, Simple Green, or equivalent) and rinsed with deionized water.

Once the well has been purged, it will be sampled with a disposable bailer, PVC bailer, stainless steel bailer, or through a low flow groundwater pump. The groundwater sample is transferred from the bottom of the bailer to reduce volatilization to the appropriate sample container. The sample containers are specified by the analytical laboratory depending on the analyses requested. Sample containers typically include volatile organic compound (VOA) vials with septa of Teflon like materials. The groundwater sample is collected into the VOAs to minimize air bubbles and once the cap has been placed on the VOA, the VOA is tipped upside down to see if air bubbles are present in the VOA. Typically a duplicate VOA is collected from each well to be analyzed by the analytical laboratory, if warranted, to verify results.

Sample containers are labeled as described in **Section 3.0** and placed immediately in an ice chest and kept refrigerated until its delivery to the analytical laboratory. A trip blank may also be prepared by the analytical laboratory to travel with the ice chest during transport to the laboratory. Field blanks from equipment that has been decontaminated may be collected in between use in different wells to verify the decontamination procedure is effective. To minimize potential for cross contamination between wells, all wells are purged and sampled from cleanest to dirtiest well.

10.0 TEDLAR BAG SOIL VAPOR SAMPLING

Sampling equipment to collect Tedlar bag soil vapor samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, and 3/16-inch diameter polyethylene tubing. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with a 3/16-inch hose barb. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. One end of the polyethylene tubing is connected to the sample collection port and one end is connected to the influent of the air pump, creating an air tight seal. The air pump is turned on and soil vapor from the sample collection port is pumped through the air pump for at least one minute. The air pump is turned off and one end of another piece of polyethylene tubing is connected to the effluent of the air pump and one end is connected to the valve on the Tedlar bag. The valve is opened and the air pump is turned on filling the Tedlar bag with the soil vapor sample until the bag has reached 75% capacity, when the valve on the Tedlar bag is closed and the air pump is turned off.

Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

11.0 SUMMA CANISTER SOIL VAPOR SAMPLING

Sampling equipment to collect Summa canister soil vapor samples includes a sterilized Summa stainless steel canister under vacuum, ¼-inch diameter polyethylene tubing, and a laboratory calibrated flow meter, if required.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with brass connection with silicone septa that has been threaded into a tapped hole on the piping network. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. One end of the polyethylene tubing is connected to the brass sample collection port and one end is connected to the canister valve or flow meter, creating an air tight seal. Prior to collecting the soil vapor sample, the valve on the Summa canister is opened to verify the Summa canister has the required vacuum which is recorded. The sample valve or flow meter is opened and the soil vapor sample is collected into the Summa canister and the sample valve is closed and the final vacuum reading (typically greater than 5 inches per square inch) on the Summa canister is recorded.

Summa canisters are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory.

12.0 SYRINGE SOIL VAPOR SAMPLING

Sampling equipment to collect syringe soil vapor samples includes a sterilized, 100 cubic centimeter, gas tight syringe and silicone septa.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with brass connection with silicone septa that has been threaded into a tapped hole on the piping network. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. The syringe is inserted into the silicone septa and the plunger is purged or pumped at least three times. The sample is collected the fourth time the syringe plunger is extracted and the syringe is removed from the sample collection port and the needle on the syringe is capped with a rubber stopper.

Syringes are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory.

13.0 TEDLAR BAG SOIL VAPOR SURVEY, TEMPORARY SAMPLING POINTS

Sampling equipment to collect Tedlar bag soil vapor survey samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, 3/16-inch diameter polyethylene tubing, and possibly a soil vapor probe. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

A temporary borehole is advanced using either a slam bar or a direct push drill rig. In the case of the slam bar, once the borehole has been created, a temporary soil vapor probe is inserted into the borehole and advanced with a slide hammer or other physical force two additional feet. A bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space. In the case of the direct push drill rig, the sampling rod is advanced to the desired depth with a 6-inch retractable vapor screen at the tip. The sample screen on the 6-inch vapor screen is removed and a bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space.

Once the bentonite seal has set, at least one hour, the soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0.** Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

13.0 TEDLAR BAG SOIL VAPOR SURVEY, TEMPORARY AND REPEATABLE SAMPLING POINTS

Sampling equipment to collect Tedlar bag soil vapor survey samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, 3/16-inch diameter polyethylene tubing, and possibly a soil vapor probe. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

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Once the bentonite seal has set, at least one hour, the soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0.** Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

13.2 REPEATABLE SAMPLING POINTS

A borehole is advanced using either a hand auger or a drill rig. A 6-inch slotted probe with caps on both ends is placed in the borehole. A Swagelok fitting is attached to one end cap and 3/16-inch diameter Nylon tubing is attached to the Swagelok fitting. A one foot sand pack is placed around the probe and the remainder of the borehole is sealed with a layer of dry bentonite powder, followed by a layer of bentonite chips, and an additional layer of dry bentonite powder. A well box is placed on the surface of the repeatable sampling point and the excess Nylon tubing is placed inside the well box.

Soil vapor survey samples will be collected at least one week after probe installation. In addition, soil vapor survey samples will only be collected after five consecutive precipitation free days and after any onsite irrigation has been suspended.

The soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0** or Summa canisters as described in **Section 11.0.** Tedlar bags or Summa canisters are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

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Other soil samples collected from each split-barrel sampler are inspected and documented to identify the soil stratigraphy beneath the site and classify the soil types according to the United Soil Classification System. The soil types are recorded on boring logs with the appropriate depth interval and any pertinent field observations. Drilling and sampling equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections and boreholes and after use.

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Select soil samples are placed into a sealed plastic bag or other appropriate container and field screened using a PID, FID, or equivalent meter. Other soil samples collected are inspected and documented to identify the soil stratigraphy beneath the site and classify the soil types according to the United Soil Classification System. The soil types are recorded field notes with the appropriate depth interval and any pertinent field observations. Sampling equipment are steam cleaned or washed in solution and rinsed in deionized water prior to use, between sample collections, and after use. Soil cuttings and rinseate water are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

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Wells are cased with both blank and factory-perforated Schedule 40 PVC. The factory perforations are typically 0.020 inches wide by 1.5 inch long slots, with 42 slots per foot. A PVC cap is typically installed at the bottom of the casing with stainless steel screws. No solvents or cements are used in the construction of the wells. Well stabilizers or centering devices may be installed around the casing to ensure the filter material and grout in the annulus are evenly distributed. The casing is purchased pre-cleaned or steam cleaned and washed prior to installation in the borehole.

The casing is set inside the augers and sand, gravel, or other filter material is poured into the annulus to fill the borehole from the bottom to approximately 1-2 feet above the perforations. A two foot thick bentonite plug is placed above the filter material to prevent the grout from filling the filter pack. Neat cement or sand-cement grout is poured into the annulus from the top of the bentonite plug to the surface. For wells located in parking lots or driveways, or roads, a traffic rated well box is installed around the well. For wells located in landscaped areas or fields, a stovepipe well protection device is installed around the well. Soil cuttings and rinseate water are temporarily stored onsite pending laboratory analytical results and proper transport and disposal.

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Boreholes for wells can also be drilled with a truck-mounted air rotary or mud rotary drill rig. Air or mud can be used as a drill fluid to fill the borehole and prevent the borehole from caving in and remove drill cuttings. Mud or air can be chosen depending on the subsurface conditions. Soil samples are collected and screened as described in **Section 1.0** and decontamination procedures are also the same as described in **Section 1.0**.

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9.0 WELL PURGING AND SAMPLING

Each well is typically purged of at least three well casing volumes of groundwater prior to collecting a groundwater sample. Purging can continue beyond three well casing volumes if field parameters including pH, temperature, electrical conductivity are not stabilizing during the purging process. If the well is purged dry before the three well casing volumes has been purged, the well is typically allowed to recharge to 80 percent of its initial water level before a groundwater sample is collected.

Purging equipment can include submersible pumps, PVC purging bailers, disposable bailers, air lift pumps, or pneumatic pumps. Prior to beginning well purging, in between each well purging, and at the completion of purging activities, all non-dedicated purging equipment is cleaned with solution (Alconox, Simple Green, or equivalent) and rinsed with deionized water.

Once the well has been purged, it will be sampled with a disposable bailer, PVC bailer, stainless steel bailer, or through a low flow groundwater pump. The groundwater sample is transferred from the bottom of the bailer to reduce volatilization to the appropriate sample container. The sample containers are specified by the analytical laboratory depending on the analyses requested. Sample containers typically include volatile organic compound (VOA) vials with septa of Teflon like materials. The groundwater sample is collected into the VOAs to minimize air bubbles and once the cap has been placed on the VOA, the VOA is tipped upside down to see if air bubbles are present in the VOA. Typically a duplicate VOA is collected from each well to be analyzed by the analytical laboratory, if warranted, to verify results.

Sample containers are labeled as described in **Section 3.0** and placed immediately in an ice chest and kept refrigerated until its delivery to the analytical laboratory. A trip blank may also be prepared by the analytical laboratory to travel with the ice chest during transport to the laboratory. Field blanks from equipment that has been decontaminated may be collected in between use in different wells to verify the decontamination procedure is effective. To minimize potential for cross contamination between wells, all wells are purged and sampled from cleanest to dirtiest well.

10.0 TEDLAR BAG SOIL VAPOR SAMPLING

Sampling equipment to collect Tedlar bag soil vapor samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, and 3/16-inch diameter polyethylene tubing. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with a 3/16-inch hose barb. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. One end of the polyethylene tubing is connected to the sample collection port and one end is connected to the influent of the air pump, creating an air tight seal. The air pump is turned on and soil vapor from the sample collection port is pumped through the air pump for at least one minute. The air pump is turned off and one end of another piece of polyethylene tubing is connected to the effluent of the air pump and one end is connected to the valve on the Tedlar bag. The valve is opened and the air pump is turned on filling the Tedlar bag with the soil vapor sample until the bag has reached 75% capacity, when the valve on the Tedlar bag is closed and the air pump is turned off.

Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

11.0 SUMMA CANISTER SOIL VAPOR SAMPLING

Sampling equipment to collect Summa canister soil vapor samples includes a sterilized Summa stainless steel canister under vacuum, ¼-inch diameter polyethylene tubing, and a laboratory calibrated flow meter, if required.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with brass connection with silicone septa that has been threaded into a tapped hole on the piping network. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. One end of the polyethylene tubing is connected to the brass sample collection port and one end is connected to the canister valve or flow meter, creating an air tight seal. Prior to collecting the soil vapor sample, the valve on the Summa canister is opened to verify the Summa canister has the required vacuum which is recorded. The sample valve or flow meter is opened and the soil vapor sample is collected into the Summa canister and the sample valve is closed and the final vacuum reading (typically greater than 5 inches per square inch) on the Summa canister is recorded.

Summa canisters are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory.

12.0 SYRINGE SOIL VAPOR SAMPLING

Sampling equipment to collect syringe soil vapor samples includes a sterilized, 100 cubic centimeter, gas tight syringe and silicone septa.

When soil vapor samples are collected from remediation equipment, the sample collection port on the remediation equipment is typically fitted with brass connection with silicone septa that has been threaded into a tapped hole on the piping network. Prior to collecting soil vapor samples from remediation equipment, air flow, temperature, and pressure or vacuum of the sampling point/remediation equipment are recorded. The syringe is inserted into the silicone septa and the plunger is purged or pumped at least three times. The sample is collected the fourth time the syringe plunger is extracted and the syringe is removed from the sample collection port and the needle on the syringe is capped with a rubber stopper.

Syringes are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory.

13.0 TEDLAR BAG SOIL VAPOR SURVEY, TEMPORARY SAMPLING POINTS

Sampling equipment to collect Tedlar bag soil vapor survey samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, 3/16-inch diameter polyethylene tubing, and possibly a soil vapor probe. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

A temporary borehole is advanced using either a slam bar or a direct push drill rig. In the case of the slam bar, once the borehole has been created, a temporary soil vapor probe is inserted into the borehole and advanced with a slide hammer or other physical force two additional feet. A bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space. In the case of the direct push drill rig, the sampling rod is advanced to the desired depth with a 6-inch retractable vapor screen at the tip. The sample screen on the 6-inch vapor screen is removed and a bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space.

Once the bentonite seal has set, at least one hour, the soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0.** Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

13.0 TEDLAR BAG SOIL VAPOR SURVEY, TEMPORARY AND REPEATABLE SAMPLING POINTS

Sampling equipment to collect Tedlar bag soil vapor survey samples includes an air pump, a Tedlar bag which can range in size from 1 to 10 liters, 3/16-inch diameter polyethylene tubing, and possibly a soil vapor probe. The air pump should be equipped with 3/16-inch hose barbs for the polyethylene tubing to attach to. The Tedlar bag must be equipped with a valve for filling and sealing the bag.

13.1 TEMPORARY SAMPLING POINTS

A temporary borehole is advanced using either a slam bar or a direct push drill rig. In the case of the slam bar, once the borehole has been created, a temporary soil vapor probe is inserted into the borehole and advanced with a slide hammer or other physical force two additional feet. A bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space. In the case of the direct push drill rig, the sampling rod is advanced to the desired depth with a 6-inch retractable vapor screen at the tip. The sample screen on the 6-inch vapor screen is removed and a bentonite seal is then placed in the borehole above the soil vapor probe to create an air tight seal and prevent ambient air from entering the sample collection space.

Once the bentonite seal has set, at least one hour, the soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0.** Tedlar bags are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.

13.2 REPEATABLE SAMPLING POINTS

A borehole is advanced using either a hand auger or a drill rig. A 6-inch slotted probe with caps on both ends is placed in the borehole. A Swagelok fitting is attached to one end cap and 3/16-inch diameter Nylon tubing is attached to the Swagelok fitting. A one foot sand pack is placed around the probe and the remainder of the borehole is sealed with a layer of dry bentonite powder, followed by a layer of bentonite chips, and an additional layer of dry bentonite powder. A well box is placed on the surface of the repeatable sampling point and the excess Nylon tubing is placed inside the well box.

Soil vapor survey samples will be collected at least one week after probe installation. In addition, soil vapor survey samples will only be collected after five consecutive precipitation free days and after any onsite irrigation has been suspended.

The soil vapor survey samples are collected into Tedlar bags as described in **Section 10.0** or Summa canisters as described in **Section 11.0.** Tedlar bags or Summa canisters are labeled as described in **Section 3.0** and placed immediately in an empty ice chest and kept dry and unrefrigerated until its delivery to the analytical laboratory. After each soil vapor sample collection, the air pump is turned on for five minutes to allow ambient air to clear the air pump and polyethylene tubing.